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Ultra Wideband Breast Cancer Detection by Using SAR for Indication the Tumor Location

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Abstract : This paper presents breast cancer detection by observing the specific absorption rate (SAR) intensity for identification tumor location, the tumor is identified in coordinates (x,y,z) system. We examined the frequency between 4-8 GHz to look for the most appropriate frequency. Results are simulated in frequency 4-8 GHz, the model overview include normal breast with 50 mm radian, 5 mm diameter of tumor, and ultra wideband (UWB) bowtie antenna. The models are created and simulated in CST Microwave Studio. For this simulation, we changed antenna to 5 location around the breast, the tumor can be detected when an antenna is close to the tumor location, which the coordinate of maximum SAR is approximated the tumor location. For reliable, we experiment by random tumor location to 3 position in the same size of tumor and simulation the result again by varying the antenna position in 5 position again, and it also detectable the tumor position from the antenna that nearby tumor position by maximum value of SAR, which it can be detected the tumor with precision in all frequency between 4-8 GHz.

Keywords : specific absorption rate (SAR), ultra wideband (UWB), coordinates, cancer detection
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